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Description of Current Conditions, RCRA Facility Investigation

for the

PPG Industries, Inc.
Natrium Plant, New Martinsville, West Virginia

Prepared for Submission to:

U.S. Environmental Protection Agency
841 Chestnut Street
Philadelphia, Penna. 19107

EPA

Prepared on Behalf of:

PPG Industries, Inc.
Natrium Plant, Chemical Group
P.O. Box 191
New Martinsville, West Va. 26155

PPG INDUSTRIES

Prepared by:

ICF Kaiser Engineers, Inc.
Four Gateway Center
Pittsburgh, Penna. 15222

ICF KAISER ENGINEERS

October 5, 1992

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APPROVAL PAGE

DESCRIPTION OF CURRENT CONDITIONS

PPG NATRIUM PLANT
NEW MARTINSVILLE, WEST VIRGINIA

October 5, 1992

Prepared for PPG Industries, Inc.
by ICF Kaiser Engineers, Inc.

Approved By _____ **Date** 10-2-92
Douglas Taylor, ICF Kaiser Engineers, Project Manager

Approved By _____ **Date** 10/02/92
Gary L. Wilson, PPG Industries, RFI Project Coordinator

Approved By K. S. Walborn **Date** 10/2/92
K. S. Walborn, PPG Industries, Manager, Environmental Control

DESCRIPTION OF CURRENT CONDITIONS REPORT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

K. S. Walborn
Manager, Environmental Control

DESCRIPTION OF CURRENT CONDITIONS
Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

List of Figures

Table of Contents (Continued)

List of Tables

1.0 INTRODUCTION

This document, a Description of Current Conditions (DOCC) Report, provides a description of the current conditions at the PPG Industries Inc. (PPG) facility located in Natrium, West Virginia. The report has been prepared by ICF Kaiser Engineers, Inc. (ICF) on behalf of PPG Industries, Inc., to satisfy the initial step of the RCRA Facility Investigation (RFI) process, as delineated in Part IIC of PPG's Corrective Action Permit WVD 00 433 6343, dated September 30, 1987.

1.1 PURPOSE

The purpose of the DOCC is to present all pertinent background information available at the commencement of the RCRA Corrective Action process. The DOCC serves as the baseline for subsequent data gathering and analysis performed during the RFI. This DOCC includes the following:

- Site location, topography, hydrogeology, physical structures, past and current waste management practices, ownership information, operational history, past and current permits and enforcement actions;
- Identification of possible sources of soil and groundwater contamination and definition of the nature and extent of contamination released from solid waste management units (SWMUs).

1.2 SCOPE OF WORK

The preparation of this DOCC relied primarily on existing documents, information developed during previous investigations, and information obtained through a series of site visits. Specifically, this work included the following:

- Review of available site specific documents prepared by environmental consultants including Geraghty & Miller, IT Corporation and Ecological Analyst, Inc. (see Section 7 for a complete list of documents);
- Review of the RCRA Verification Investigation (VI) and RCRA Facility Assessment (RFA) Reports;
- Site visits to evaluate existing conditions;
- Interviews with site personnel; and
- Assessment of the known types and locations of contamination.

2.0 REGIONAL SETTING

2.1 REGIONAL GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

2.1.1 Regional Geology

The Northern Panhandle region of West Virginia is underlain by Paleozoic-age sedimentary rocks consisting mainly of conglomerates, sandstones, siltstones, shales, fresh-water and marine limestones, coals, and lesser amounts of chert, iron ore, and rock salt and other evaporates. Coal deposits, which mainly occur in Pennsylvania-age and, to a lesser extent, Permian-age rocks, are a very important natural resource of the Ohio River Valley area. Rock salt and natural brines of Silurian-age strata are of local importance to PPG and other chemical industries for the manufacture of chlorine, bleaches, and caustic soda.

In the hilly, more elevated areas of the Northern Panhandle, rock units are generally overlain by a thin to moderately thick layer of sedimentary or residual soil that has been formed in place by the disintegration of underlying rocks and by the accumulation of organic material. These soils are usually relatively fertile and well drained, and are capable of supporting woodland, cropland, and pasture (Soil Conservation Service, 1960). Owing to the hilly topography characterizing these upland areas, the soils tend to be fairly susceptible to erosion.

The Ohio River Valley is carved deeply into bedrock strata. Beneath the bottomland deposits, the buried bedrock surface slopes from the valley wall toward the Ohio River, reflecting the U-shaped configurations of the bedrock valley prior to aggradation (infilling) by glacial outwash deposits composed predominantly of sand and gravel. Subsequent river floodplain deposits (i.e., silt, clay, fine sand, and mixtures of these) has in some areas capped the course glacial outwash with relatively fine-textured surficial deposits, particularly beneath more riverward parts of Wells Bottom. In areas adjacent to the valley wall, outwash deposits pinch out against the valley-wall bedrock strata and are commonly capped with colluvium (clay, silt, rock fragments, and other mud-slide-type debris) which tends to thin with distance towards the river.

2.1.2 Regional Hydrogeology

The Ohio River Valley water-table aquifer is comprised primarily of sand and gravel, and constitutes the main water bearing unit in the area. The aquifer has been extensively developed within the plant area. Without the effects of development, the natural water table slopes from east to west; from the hills toward the Ohio River.

Data obtained from an aquifer testing program conducted at the plant show the water-table aquifer to be characterized by a transmissivity ranging from 80,000 to 95,000 gallons per day per foot. The average thickness of the aquifer is about 40 feet. Hydraulic conductivities are about 10^{-1} cm/sec or greater. Average annual precipitation in the area is about 43 inches and infiltration has been estimated as 20 to 50 percent of infiltration. This results in infiltration ranges of 400,000 to 1,000,000 gallons per day per square mile.

In addition to the water-table aquifer, the area is also underlain by a bedrock aquifer system at a depth of about 160 feet. Wells drilled by PPG showed low yields, 3 to 15 gpm, in this aquifer. The natural bedrock aquifer water quality is poor due to high total dissolved solids (TDS) concentrations.

2.2 TOPOGRAPHY AND SURFACE WATER

Natrium is situated within the Ohio River Valley near the base of the West Virginia Northern Panhandle (see Figure 2-1). This area is part of the Appalachian Plateau physiographic province and, in general, can be described as a highly dissected plateau or plain characterized by rugged topography, steep slopes, and strong relief, with elevations ranging from about 600 feet to more than 1,300 feet above mean sea level (MSL). Stream erosion and transport, in conjunction with weathering and mass-wasting of slope materials, are largely responsible for the existing topography of this region.

The PPG Natrium plant is located on floodplain and river terrace features comprised of alluvial deposits. The terraces are developed from Pleistocene glacial outwash deposits that have been downcut by various stages of the Ohio River. The terraces are characterized by coarse sand and silt. Surficial sediments of lower terrace features contain increasing amounts of silt and clay which probably represent recent floodplain deposits.

There are three primary terrace levels at the PPG facility, with elevations averaging 630, 660, and 690 feet above MSL. In addition, a small localized terrace with an elevation of approximately 715 feet above MSL is present at the site of the closed Mercury Surface Impoundment. The terraces are bounded on the east by steep valley walls that rise to an elevation of over 1,300 feet and on the west by the Ohio River at a pool elevation of approximately 620 feet.

The Ohio River is the major surface water body within 2 miles of the facility. A tributary, Sims Run, drains property to the east of PPG and joins the river at the north (upstream) end of the PPG property. This tributary does not receive runoff from facility operations because it is separated from the operations area by a steep bedrock ridge.

The PPG facility is located on a narrow strip of land bordering the east shore of the river. The Ohio River valley is generally steep walled with a narrow floodplain. A 100-year flood level elevation of 641 feet above MSL has been estimated for the region. Although some of the PPG property is located within the 100 year floodplain, the manufacturing area is located outside the floodplain.

The river has a mean flow rate of 24,000 cubic feet per second (CFS) and a low flow rate of 5300 CFS. The Hannibal Dam, controls the water level and keeps river pool elevations between 620 and 624 feet above MSL during normal flow periods. The river level elevation increased 20 feet with the construction of the Hannibal lock and dam in New Martinsville.

The water quality of the river is reported to be suitable for many industrial uses. The river represents a dependable supply of industrial water for area industries.

JOB NO.: 0516600100 PLOT SCALE: 1=1

STARTED ON: 9/21/92 REVISED: 9/29/92

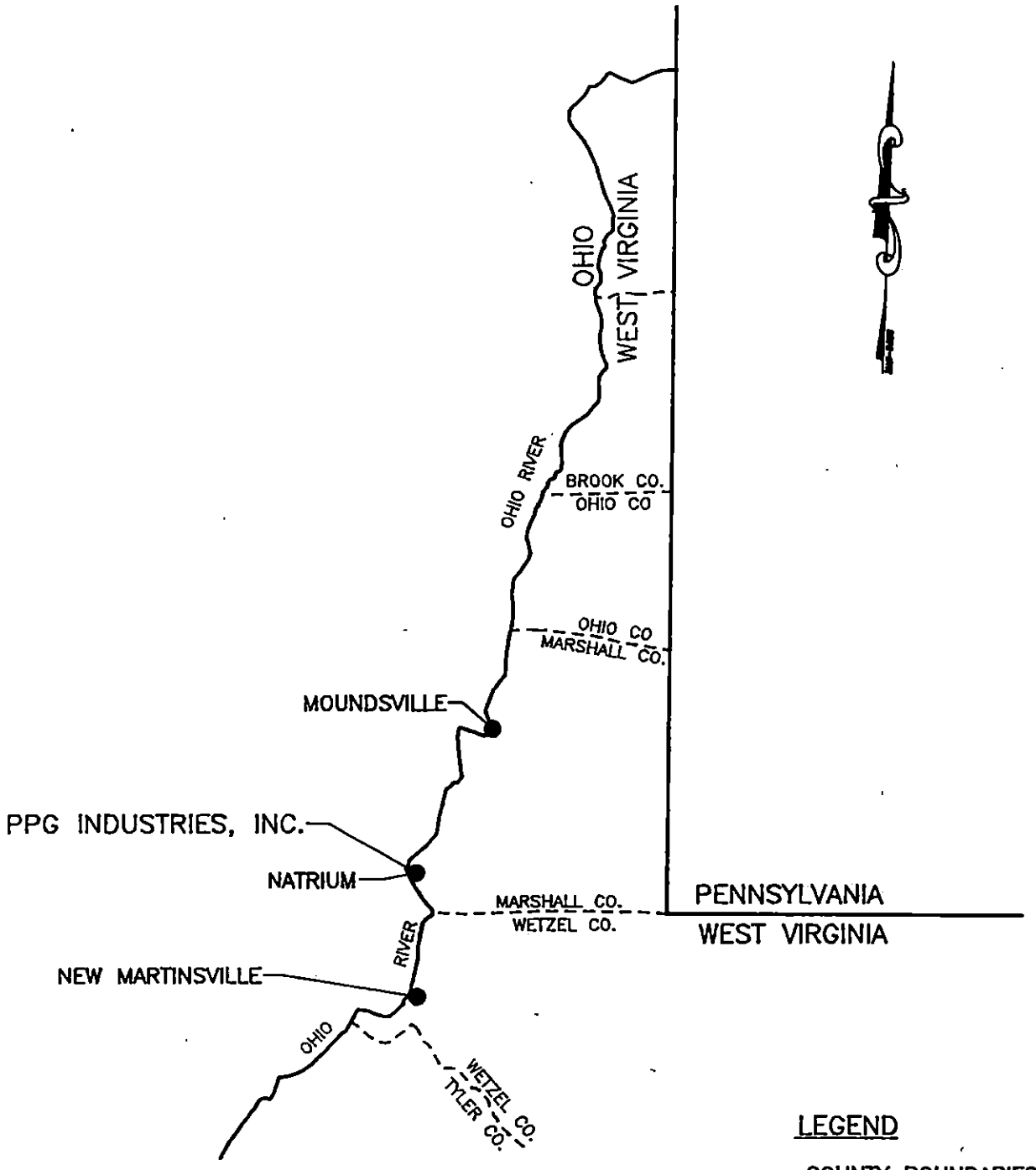


FIGURE 2-1

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	SITE VICINITY MAP	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/21/92	DR.: R.C. LIPP
	SCALE: AS NOTED	DWG. NO.: FIG2-1

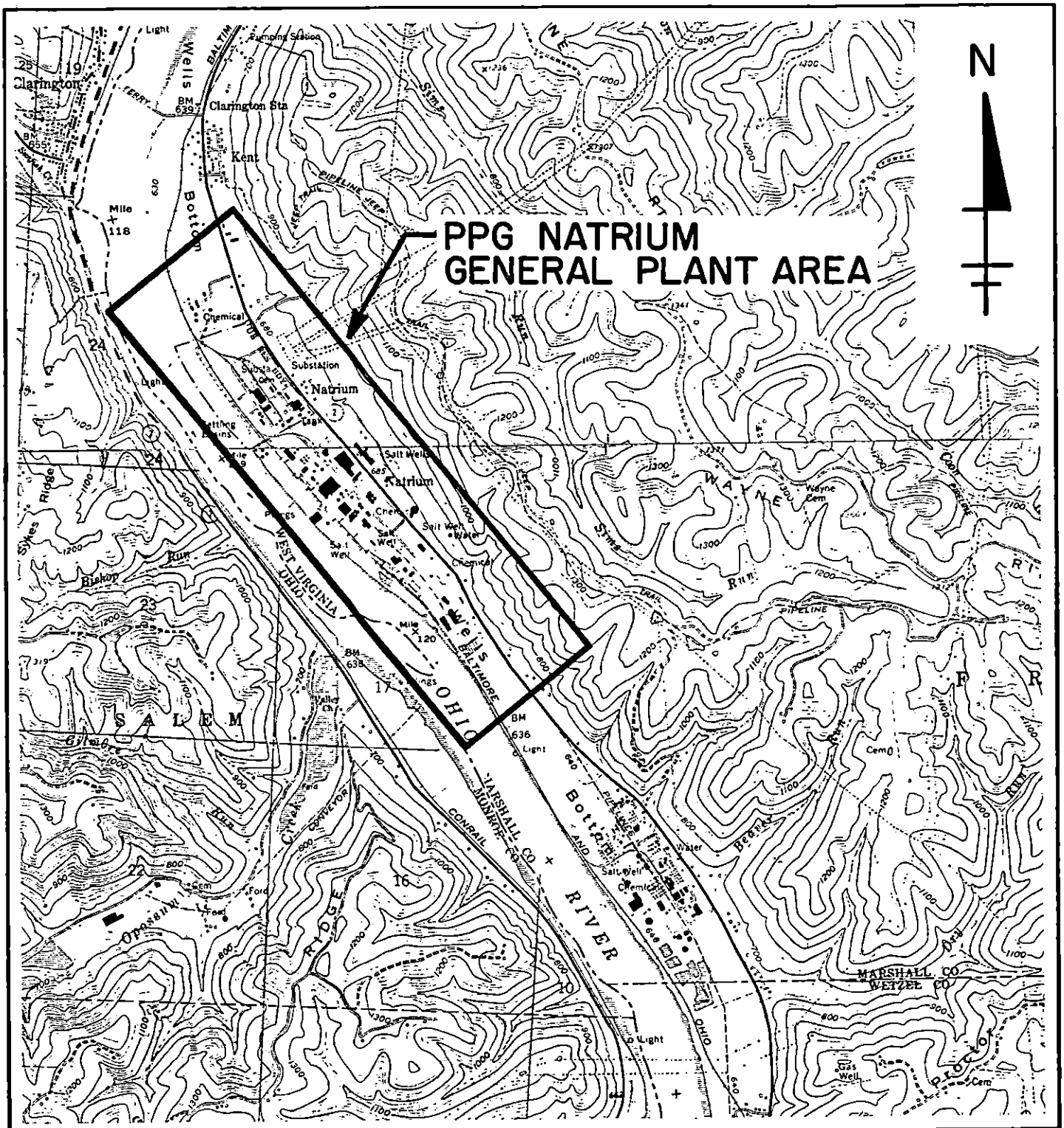
2.3 SURROUNDING LAND USE AND WATER SUPPLIES

2.3.1 Land Use

The Natrium facility is located adjacent to the community of Kent and two miles north of the community of Proctor (see Figure 2-2). Historically, the area surrounding the Natrium facility existed as either undeveloped, industrial, agricultural, or rural residential property. Currently, the area is predominately industrial. In addition, several parcels of PPG's property are leased to commercial businesses.

2.3.2 Water Supplies

Wells Bottom is an alluvial deposit of sediments along a meander on the river. Industries along Wells Bottom utilize groundwater for industrial purposes. Approximately 26 households in the community of Kent also depend on the groundwater from the Ohio River Valley water-table aquifer on the Wells Bottom as a domestic water source.



REFERENCE:

U.S.G.S. 7.5' TOPOGRAPHIC MAPS POWHATAN POINT QUADRANGLE OHIO - W. VA. DATED: 1960, PHOTOREVISED: 1972 AND 1976, NEW MARTINSVILLE, W. VA. - OHIO DATED: 1960 PHOTOREVISED: 1972 AND 1976, SCALE: 1" = 2000'.

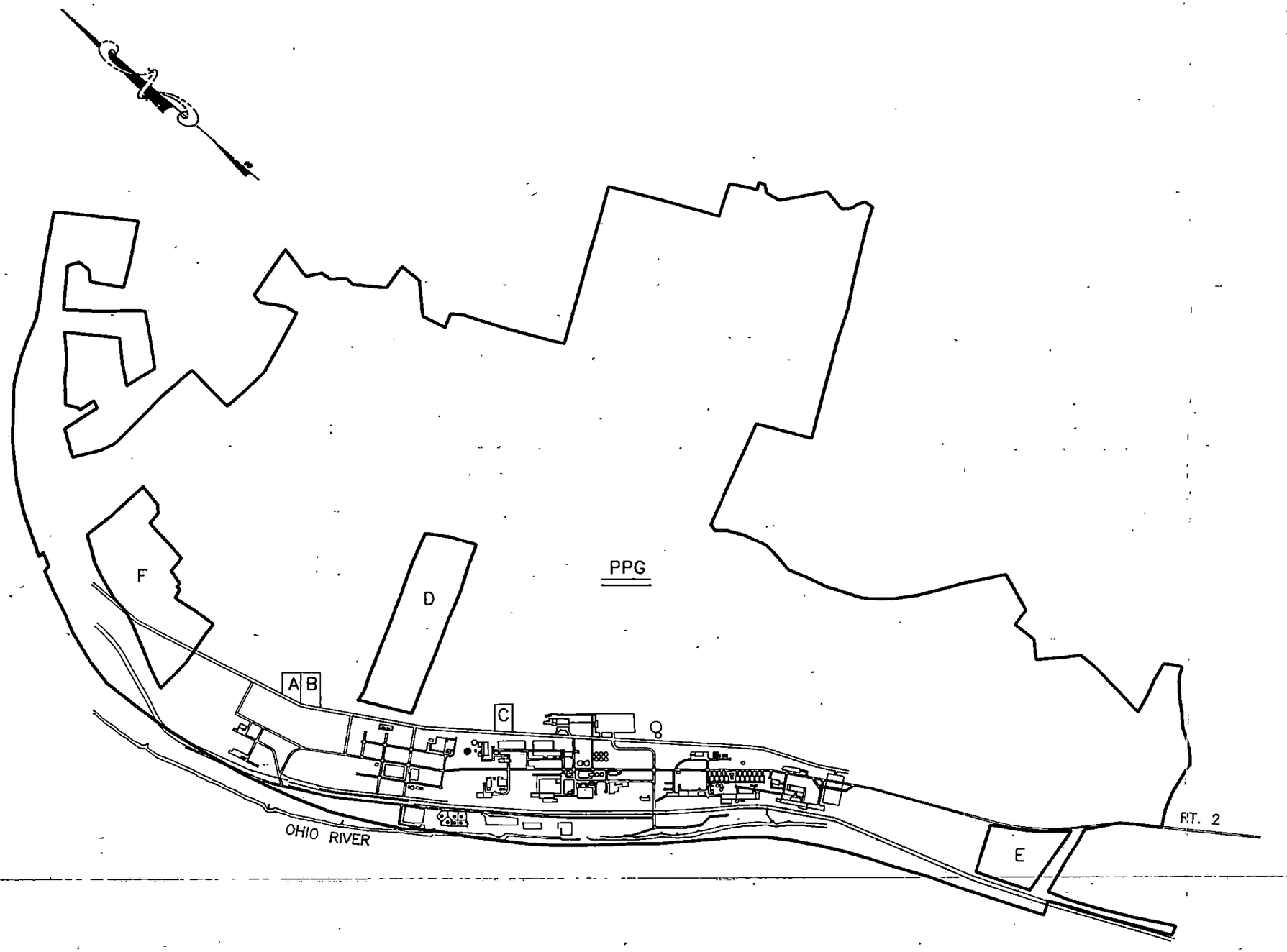
FIGURE 2-2

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	SITE LOCATION MAP
ICF KAISER ENGINEERS PITTSBURGH, PA.	DATE: SEPT. 22, 1992 | DR.: B. SNYDER SCALE: AS NOTED | DWG. NO.: 05166

BRUNING 78207 FORM # 4804

JOB NO.: 0516600100 PLOT SCALE: 1=1600

STARTED ON: 9/23/92 REVISED: 9/28/92



LEGEND:

A–PB&S CHEMICAL
B–CHEMICAL LEAMAN
C–GENERAL HYDROGEN
D–WHEELING POWER
E–MILES
F–KENT

FIGURE 3–1

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	PPG PROPERTY BOUNDARIES	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/23/92	DR.: D.MAJERNIK
	SCALE: 1"=1600'	DWG. NO. M1A

3.0 SITE SPECIFIC SETTING

This section provides site specific background information about the PPG Natrium Plant near New Martinsville, West Virginia, including the regional location, pertinent boundary features, site geology and hydrogeology, and a summary of previous investigations. This section also discusses the status of the facility's permits.

3.1 FACILITY BACKGROUND

PPG Industries owns and operates the Natrium industrial chemical production plant near New Martinsville, West Virginia. This facility is located along the eastern bank of the Ohio River approximately 30 miles south of Wheeling, West Virginia, and 6 miles north of New Martinsville, West Virginia, in Marshall County. The plant is situated on the northern part of the Wells Bottom area. This tract of land is heavily industrialized, with Miles Chemical Company and Air Products and Chemicals, Inc., occupying the remainder of the Wells Bottom area south of the PPG facility. The area industries, including PPG, employ up to 4,700 people. The area is sparsely populated with only 550 residents within a 4-mile radius of the facility. PPG owns approximately 3600 acres of contiguous property; however, the manufacturing operation occupies only 200 acres of this property. The manufacturing operation is bounded by the Ohio River to the west, a steep wooded hillside to the east, Miles Chemical Company to the south, and the small community of Kent to the north. Figure 3-1 shows the legal borders of the plant property.

3.1.1 Site History

The PPG Natrium plant construction began in 1943 in response to a need for chlorine by the U.S. Government. PPG had determined that there was a salt deposit beneath the site and that brine could be mined to produce chlorine. The formation is approximately 100' thick and is about 6,800 feet below ground surface. The original plant produced chlorine, hydrogen, and caustic using electrolysis processes. Periodic expansions of the Natrium plant occurred during PPG's 48 years of ownership. During this time, their main products have included caustic soda, chlorine, chlorinated benzenes, sodium hydrosulfide, titanium oxide, benzene hexachloride, calcium hypochlorite, carbon bisulfide, barium compounds, and ammonia. However, the chloralkali process has always been the principal operation at Natrium.

The power house was also constructed in 1943 to provide electricity needed in the chlorine process. The power house has been expanded several times since its original construction.

Prior to the property's use as an industrial operation, the property was used for farming and agriculture. A sand and gravel quarry operation also operated on a small section of the property.

Part of what is currently the northwest portion of PPG's property was originally owned, developed, and operated by the U.S. Army Chemical Corps' Marshall Plant. The plant was originally operated by DuPont from 1943 to 1944. The Marshall Plant was built as a sub-tropical bleach (STB) plant and manufactured perchloroethylene, tetrachloroethane, trichloroethane and possibly several other compounds. The Marshall Plant was located next to the PPG plant to be close to the supplier of chlorine used in the Marshall Plant's chlorination process.

For an unknown period between 1944 and 1952, the Marshall Plant was operated by Glyco as a batch specialty chemical plant. Over 100 specialty compounds were produced including glycols, glycerines, amines, and amides.

PPG leased the Marshall Plant from the U.S. Government prior to purchasing it in 1964.

3.1.2 Description of Wells

Water wells, brine wells, and monitoring wells are located at various locations throughout the Natrium Plant. Tables 3-1 and 3-2 provide a summary of the water well and monitoring well status including ground, top-of-casing, and screened interval elevations. The brine wells are further described in the next section.

3.1.2.1 Brine Wells

The brine extracted from salt cavities is the basic raw material for the chlorine/caustic operations at the Natrium facility. In turn, the products and by-products from these operations are utilized in other processes throughout the plant.

The process of brine extraction and purification involves the pressurized injection of water, through injection wells, into the salt cavity, found at 6700 to 6800 feet underground. The injection wells operate at approximately 1,000-1,200 psi. After the injected water is saturated with salt it is extracted as brine. The solution is then pumped to the brine treatment facility located in Area 8 for removal of impurities. After treatment the brine is used for the production of chlorine.

Two practices common to the brine extraction process should be noted:

- In the past, development oil was injected into the brine cavity through active brine wells to promote horizontal dissolution of the salt layer. The oil promoted this type of movement by floating on the injected water within the cavity, thereby coating the top of the cavity. The oil served as a barrier to prevent further dissolving of the salt strata.

- During brine production, the wells require occasional maintenance. When maintenance is performed, the wells must be depressurized. The water removed through depressurization may contain trace amounts of drip gas, sulfides, and development oil. This water is discharged directly to the sewers. However, a system, which is presently being installed, will eliminate the possibility of these materials entering the sewers.

Table 3-3 presents a brine well status summary including installation dates and pumping rates for the various brine wells.

3.1.2.2 Injection Wells

Over time the salt concentration of extracted brine decreases to the extent where the brine is no longer useful for production. Wells that no longer provide production quality brine are used to reinject the calcium carbonate precipitate, or brine mud, produced as a waste product during brine

TABLE 3-1

WATER WELL STATUS SUMMARY

WELL NO.	STATUS	PUMP RATE	INSTALL DATE	CLASS
1	ABANDONED	NA	04/42	NA
2	ACTIVE	NA	12/42	E
3	ABANDONED	NA	07/42	NA
4	ABANDONED	NA	49	NA
5	ACTIVE	260	47	W
6	ABANDONED	NA	47	NA
7	ABANDONED	NA	12/48	NA
8	ABANDONED	NA	05/50	NA
9	ABANDONED	NA	05/50	NA
10	ABANDONED	NA	06/50	NA
11	ABANDONED	NA	52	NA
12	ACTIVE	400	52	C
13	ABANDONED	NA	53	NA
14	PLUGGED	NA	04/53	NA
15	ABANDONED	NA	04/53	NA
16	ABANDONED	NA	05/53	NA
17	ABANDONED	NA	53	E
18	ACTIVE	245	55	W
19	ACTIVE	70	55	W
20	ACTIVE	200 As needed	55	W
21	NEVER USED	NA	55	NA
22	ABANDONED	NA	08/59	NA
23	ABANDONED	NA	09/59	NA
24	ABANDONED	NA	07/60	NA
25	ABANDONED	NA	07/60	E
26	ABANDONED	NA	11/58	NA
27	ABANDONED	NA	08/60	NA
28	ACTIVE	240	01/62	W
29	ABANDONED	NA	12/61	NA
30	ABANDONED		63	NA
31	REMOVED	NA	63	NA
32	NEVER USED	NA	NA	NA

TABLE 3-1 (Continued)
WATER WELL STATUS SUMMARY

WELL NO.	STATUS	PUMP RATE	INSTALL DATE	CLASS
33	ACTIVE	50	64	W
34	ACTIVE	200	65	C
35	ACTIVE	200	65	C
36	NEVER USED	NA	65	NA
37	ACTIVE	500	65	C
38	ACTIVE	250	65	C
39	REMOVED	NA	04/66	NA
40	ABANDONED	NA	11/66	NA
41	ACTIVE	140	10/70	W
43	ACTIVE	200	12/71	C
50		175	66	W
51	ACTIVE	175	66	W
52	ABANDONED	NA	07/67	NA
53	ACTIVE	55	07/67	W
54	ABANDONED	NA	NA	NA
55	ACTIVE	180	78	W
56	ACTIVE	220	81	W
57	ACTIVE	405	11/81	W
58	ABANDONED	NA	10/83	E
59	ACTIVE	370	87	W
60	ACTIVE	525	01/90	W
STB	ACTIVE	150	NA	W
HEX	ABANDONED	NA	NA	NA
WEST	ACTIVE	150	42	D
NH3-1	ACTIVE	350	54	W
NH3-2	ACTIVE	210	54	D
NH3-3	ACTIVE	350	63	W

CLASSES:

C - CAVITY WATER
D - DRINKING WATER
E - ENVIRONMENTAL CONTROL
W - 55 DEG. WELL WATER
NA - NOT APPLICABLE

TABLE 3-2

MONITORING WELL STATUS SUMMARY

Well No.	Status	Location	Install Date	Elevation Of Top of PVC Casing	Ground Elevation	Screened Interval Elevations
GM-1	ACTIVE	HG POND	11/80	693.10	689.5	594.1-604.1
GM-2	REMOVED	HG POND	11/80	709.88	706.63	607.88-617.88
GM-3	ABANDONED	HG POND	11/80	721.99	718.74	688.74-698.74
GM-5	ACTIVE	HG POND	11/80	718.39	715.09	671.09-681.09
GM-6	ACTIVE	HG POND	11/80	696.90	693.8	619-629
GM-7	REMOVED	HG POND	11/80	710.74	707.44	653.44-663.44
GM-8	ACTIVE	HG POND	09/85	720.0	718.0	658.6-668.6
GM-9D	ACTIVE	HG POND	09/85	719.0	717.0	656.2-668.6
GM-9S	ACTIVE	HG POND	09/85	719.0	717.0	687-697
GM-10	REMOVED	HG POND	09/85	702.0	700.0	595.5-615.5
GM-11	ACTIVE	HG POND	09/85	698.0	696.0	593-608
MW-1	ACTIVE	E. R&D AREA	08/81	690.99	688.99	636.49-646.49
MW-2	ACTIVE	N. DEV. BLDG.	08/81	687.44	685.5	588.44-618.44
MW-3	ACTIVE	N. FLYASH	08/81	640.30	638.8	588.80-618.80
MW-4	ACTIVE	N. FLYASH	08/81	637.16	635.66	579.66-619.66
MW-5	ACTIVE	MARSHLL WSTE PD	09/81	629.57	628.07	609-57-619.57
MW-6	ACTIVE	MARSHLL PLANT	08/81	646.89	645.39	571.39-611.39
MW-7	ACTIVE	MARSHLL PLANT	09/81	654.58	653.08	570.08-610.08
MW-8	ACTIVE	S. MARSHL PLANT	09/81	657.86	656.36	573.36-613.36
MW-9	ACTIVE	W. CS2	09/81	668.46	666.96	584.46-624.46
MW-10	DAMAGED	N. CCT #6	09/81	673.59	671.59	581.59-611.59
MW-11	ACTIVE	HG BRN TREAT	09/81	671.56	670.06	580.06-610.06
MW-12	DAMAGED	S. HG WSTE TRT	09/81	673.02	671.52	583.52-613.52
MW-13	DAMAGED	E. NAOH COOL TW	09/81	667.56	666.0	582.26-612.26
MW-14	ACTIVE	NW CARP SHOP	09/81	649.10	647.6	580.10-617.10
MW-15	PLUGGED	SW INRG WSTE PD	09/81	646.01	644.5	574.51-614.51

TABLE 3-2 (Continued)

MONITORING WELL STATUS SUMMARY

Well No.	Status	Location	Install Date	Elevation Of Top of PVC Casing	Ground Elevation	Screened Interval Elevations
MW-16	DAMAGED	SE BHC WSTE STE	09/81	640.18	638.48	576.48-619.48
MW-17	ACTIVE	NW C-H SHIPING	09/81	641.85	640.35	574.35-614.35
MW-18	ACTIVE	S. PELS	09/81	641.87	640.0	575.87-615.87
MW-19	ACTIVE	NAOH TRK LOAD	09/81	667.92	666.42	577.42-617.42
MW-20	REMOVED	N. FLYASH	05/83	642.61	640.60	602.6-622.6
MW-21	ACTIVE	N. FLYASH	05/83	647.02	645.38	607.38-627.38
MW-22	REMOVED	N. FLYASH	05/83	640.32	688.30	600.3-620.3
MW-23	ACTIVE	N. FLYASH	06/83	646.62	644.90	606.9-626.9
MW-24	ACTIVE	N. FLYASH	04/88	640.52	638.0	578.5-588.5
MW-25	ACTIVE	N. FLYASH	04/88	640.29	638.0	593-613
MW-26	ACTIVE	N. FLYASH	04/88	665.20	663.0	572.5-582.5
MW-27	ACTIVE	N. FLYASH	04/88	665.10	663.0	595.5-615.5
MW-28	ACTIVE	N. FLYASH	04/88	648.75	646.5	603.5-623.5
MW-29	ACTIVE	N. FLYASH	04/88	650.08	648	603-623
MW-30	ACTIVE	N. STA. "E"	04/88	657.42	655.4	597.72-617.92
MW-31	ACTIVE	N. STA. "E"	04/88	674.28	672.3	597.78-617.78
MW-32	ACTIVE	E. SANITARY LNDFL	04/88	658.86	656.8	596.86-616.86
MW-33	ACTIVE	N. STA. "E"	04/88	667.61	665.6	596.11-616.11
MW-100	ACTIVE	MARSHLL WSTE PD	09/89	638.10	635.33	604.33-624.33
MW-101	ACTIVE	MARSHLL WSTE PD	09/89	641.63	639.02	599.02-619.02
MW-102	ACTIVE	MARSHLL WSTE PD	09/89	643.41	640.10	601.1-621.1
MW-103	ACTIVE	NW INRG WSTE PD	09/89	648.85	645.94	600.94-620.94
MW-104	ACTIVE	NE INRG WSTE PD	09/89	650.62	647.53	602.53-622.53
MW-105	ACTIVE	NE INRG WSTE PD	09/89	650.40	647.58	602.58-622.58
MW-106	ACTIVE	SW BARIUM LNDFL	09/89	638.10	637.48	608.48-628.48

TABLE 3-2 (Continued)

MONITORING WELL STATUS SUMMARY

Well No.	Status	Location	Install Date	Elevation Of Top of PVC Casing	Ground Elevation	Screened Interval Elevations
MW-107	ACTIVE	SE BARIUM LNDFL	09/89	641.19	638.59	609.59-629.59
MW-108	ACTIVE	NW BARIUM LNDFL	09/89	644.03	641.50	606.5-626.5
MW-109	ACTIVE	NE BARIUM LNDFL	09/89	650.74	647.87	601.87-621.87
MW-110	ACTIVE	BHC WSTE STE	09/89	639.07	636.35	605.35-625.35
MW-111	ACTIVE	S. BHC WSTE STE	09/89	630.54	630.54	610.64-625.64
MW-112	ACTIVE	NW F.A. J-1	09/89	635.49	632.99	602.99-622.99
MW-113	ACTIVE	NW F.A. J-2	09/89	636.89	634.00	599-619
MW-114	ACTIVE	SE F.A. J-2	09/89	640.62	637.67	599.67-619.67
MW-115	ACTIVE	NE F.A. J-2	09/89	NEEDS REPAIR	638.54	599.54-619.54
MW-116	ACTIVE	E F.A. J-1	09/89	641.65	638.73	599.73-619.73
MW-117	ACTIVE	SANITARY LNDFL	09/89	655.49	652.53	597.53-617.53
MW-118	ACTIVE	W. HG WSTE TKS	09/89	659.86	657.34	597.34-617.34
MW-119	ACTIVE	NE HG WSTE TKS	09/89	671.17	671.33	605.33-625.33
MW-120	ACTIVE	HG WSTE TKS	09/89	671.49	671.63	600.63-620.63
MW-121	ACTIVE	SW C-H LNDFL	09/89	639.50	636.71	606.49-626.49
MW-122	ACTIVE	SE C-H LNDFL	09/89	637.31	634.58	603.72-623.72

TABLE 3-3

BRINE WELL STATUS SUMMARY

WELL NO.	STATUS	LOCATION	PUMP RATE	INSTALL DATE
1	WASTE INJECTION	#1 FIELD	50 AVE.	09/42
2	WASTE INJECTION	#1 FIELD	50 AVE.	12/42
3	WASTE INJECTION	#1 FIELD	PLUGGED	05/43
4	WASTE INJECTION	#1 FIELD	PLUGGED	10/43
5	PRODUCTION	#1 FIELD	700 MAX.	09/46
6	INJECTION	#1 FIELD	320 MAX.	03/49
7	PLUGGED	#2 FIELD	PLUGGED	P184B
8	INJECTION	#2 FIELD	800 MAX.	10/58
9	PRODUCTION	#2 FIELD	660 MAX.	05/59
10	STANDBY	#2 FIELD	NA	06/62
11	INJECTION	#2 FIELD	600 MAX.	08/64
12	PRODUCTION	#2 FIELD	560 MAX.	03/64
17	INJECTION	#1 FIELD	300 MAX.	07/67
18	PRODUCTION	#1 FIELD	570 MAX.	06/83
31	INJECTION	#3 FIELD	700 MAX.	09/66
32	PLUGGED	#3 FIELD	PLUGGED	07/67
33	INJECTION	#3 FIELD	820 MAX.	07/67
34	STANDBY	#3 FIELD	NA	02/71
35	STANDBY	#3 FIELD	NA	02/75
36	INJECTION	#3 FIELD	800 MAX.	10/80
37	PRODUCTION	#3 FIELD	700 MAX.	01/90
38	PRODUCTION	#3 FIELD	1,000 MAX.	06/91

NA - NOT APPLICABLE

treatment. The Natrium plant has four Class V injection wells that either are currently used or were used in the past for waste injection. These wells include brine wells 1 to 4, which are located in No. 1 Brine Field. Wells 3 and 4 have been plugged in accordance with UIC regulations and can no longer be used for waste injection. Brine treatment sludge disposal is permitted for each of these injection wells through State of West Virginia Water Pollution Control Permit No. UIC-3S05-101.

3.1.3 Waste Disposal Policy

PPG Natrium has had a clear, plant-wide standard procedure (No. 5-25) for handling and disposing waste materials since October of 1981. In that procedure, PPG lists that "waste paper, packing and building materials, clothing and those materials known to be inert and innocuous must be accumulated in trash cans or dempster boxes (dumpsters)". These materials were originally disposed of in the plant's sanitary landfill. Currently, PPG collects plant non-hazardous waste from the dumpsters and consolidates it at the trash compactor facility. These dumpsters are not always returned to the same locations and the number and placement of non-hazardous waste dumpsters depends on plant requirements and operations. Offsite vendors collect plant trash from the compactor facility for disposal at offsite landfills. Hazardous wastes were and are prohibited from the routine dumpster non-hazardous waste disposal system. The procedure clearly details the procedure for handling hazardous waste disposal through commercial services.

No hazardous wastes are disposed of in the dumpsters or trash compactor system.

3.1.4 Sanitary Sewers

The plant is served by a series of sanitary sewers and septic systems for the treatment and disposal of sanitary waste from handwash sinks, toilets and the plant commissary. This system is completely independent of the process/chemical sewers which handle storm water, floor drains, process water and spill/upset conditions. Most of the plant is connected to the sanitary sewer which leads to a small 24,000 gpd wastewater treatment plant located west of the caustic area near the central portion of the Natrium plant. The plant consists of an extended aeration package treatment unit which includes clarification and chlorination of the effluent. Discharges from the plant flow to the Ohio River through Outfall No. 009 under National Pollution Discharge Elimination System (NPDES) permit. Some areas of the plant are served by septic tanks and leach fields. Five fields are at the following locations.

Ammonia Process Area
Marshall Plant Product Area
Scale Gate
Brine Well Office

These facilities are permitted and inspected by the West Virginia Department of Health. The sanitary wastewater system and the septic tank/absorption bed systems do not now, nor have they ever, been used for disposal of chemical wastes. They are plumbed only to handwash sinks, toilets, etc., and can not receive spills, process waste, or other chemical waste which would cause them to be SWMUs or AOCs.

The locations of all outfalls located at the Natrium Plant are presented on Figure 3-2.

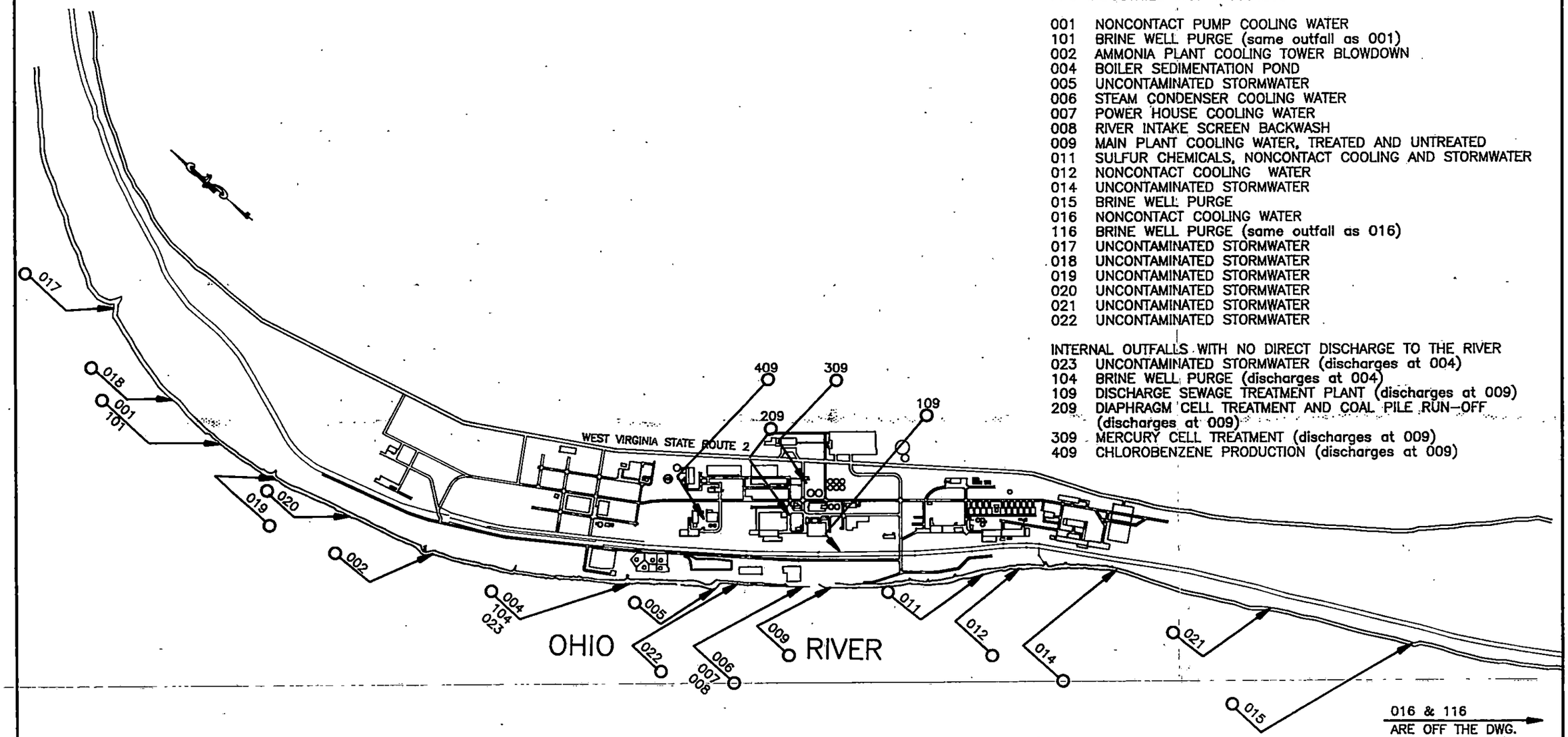
JOB NO.: 0516600100 PLOT SCALE: 1=1200

STARTED ON: 9/29/92 REVISED: 10/01/92

LISTING OF FACILITY AND OUTFALLS
WEST VIRGINIA MAJORS
PPG INDUSTRIES INC. WV0004359

001 NONCONTACT PUMP COOLING WATER
101 BRINE WELL PURGE (same outfall as 001)
002 AMMONIA PLANT COOLING TOWER BLOWDOWN
004 BOILER SEDIMENTATION POND
005 UNCONTAMINATED STORMWATER
006 STEAM CONDENSER COOLING WATER
007 POWER HOUSE COOLING WATER
008 RIVER INTAKE SCREEN BACKWASH
009 MAIN PLANT COOLING WATER, TREATED AND UNTREATED
011 SULFUR CHEMICALS, NONCONTACT COOLING AND STORMWATER
012 NONCONTACT COOLING WATER
014 UNCONTAMINATED STORMWATER
015 BRINE WELL PURGE
016 NONCONTACT COOLING WATER
116 BRINE WELL PURGE (same outfall as 016)
017 UNCONTAMINATED STORMWATER
018 UNCONTAMINATED STORMWATER
019 UNCONTAMINATED STORMWATER
020 UNCONTAMINATED STORMWATER
021 UNCONTAMINATED STORMWATER
022 UNCONTAMINATED STORMWATER

INTERNAL OUTFALLS WITH NO DIRECT DISCHARGE TO THE RIVER
023 UNCONTAMINATED STORMWATER (discharges at 004)
104 BRINE WELL PURGE (discharges at 004)
109 DISCHARGE SEWAGE TREATMENT PLANT (discharges at 009)
209 DIAPHRAGM CELL TREATMENT AND COAL PILE RUN-OFF (discharges at 009)
309 MERCURY CELL TREATMENT (discharges at 009)
409 CHLOROBENZENE PRODUCTION (discharges at 009)



SCALE
0 600 1200
1"=1200'

FIGURE 3-2

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	FACILITY OUTFALLS	
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/29/92	DR.: R.C. LIPP
	SCALE: 1"=1200	DWG. NO.05166-B4

3.2 SITE GEOLOGIC AND HYDROGEOLOGIC CONDITIONS

Previous investigations conducted by Geraghty & Miller, Inc., for PPG provided the following general information on geologic and hydrogeologic conditions throughout the Natrium plant.

3.2.1 Site Geology

The main plant complex is underlain by unconsolidated deposits of sand, silty to sandy clay, and pebbles, resting on a bedrock base. Results of grain size analyses of selected samples from boreholes indicate the gross physical composition of soils characterizing unconsolidated deposits beneath the main plant.

Throughout central portions of the plant, roughly parallel to Skyline Drive, sediments consist predominantly of sand and pebbles which extend 90 feet or more to bedrock. In the east and west plant areas, sand is overlain by deposits of silty to sandy clay which tend to thicken toward the Ohio River and the valley wall.

The coarser soil materials are composed primarily of quartz and lesser amounts of feldspar minerals, as determined by visual inspection. No laboratory tests were conducted to determine the exact mineralogy of clays and finer soil fractions; however, low cation exchange capacities (7 meq/100 or less) determined for clay-rich samples suggest that kaolinite may be a primary component.

As mentioned in Section 2.1, most of the sand and gravel materials comprising Wells Bottom are thought to represent outwash that aggraded the Ohio River Valley during retreat of Pleistocene glaciers. In addition, accumulations of finer sediments, particularly in the areas adjacent to the Ohio River probably represent deposition of floodplain alluvium.

For the most part, silty to sandy clay deposits underlying upper plant areas are believed to represent locally deposited colluvium and detrital materials derived form weathering and mass-wasting of uplands and valley walls; rock fragments are common throughout these sediments.

Alluvial deposits are underlain by bedrock of Paleozoic age. Based on geologic logs of abandoned drinking water wells (Nos. 14, 15, 16, and 26) the upper 100 feet of bedrock is mostly comprised of shale and hard limestone.

The surface of bedrock deposits beneath the main plant dips east to west, i.e., from the valley wall toward the Ohio River. Identification of deeper bedrock deposits (to depths exceeding 6800 feet) was performed during brine well installations which penetrate Silurian-age salt beds. In addition to shale and limestone, drilling logs from the brine well installation show layers of sandstone, siltstone, chert and cherty limestone, dolomite, coal, and, of course, salt.

3.2.2 Site Hydrogeology

Two types of water bearing zones are present within alluvial deposits beneath the main plant site. They are discontinuous zones of perched groundwater and the Ohio River Valley alluvial aquifer. Perched zones represent unconfined groundwater that is separated from the water table by an unsaturated zone. Where present, perched zones are generally situated within silty to sandy clay

materials which, due to their relatively low permeability, restrict the downward percolation of recharge waters.

The Ohio River Valley alluvial aquifer is comprised primarily of sand and gravel on Paleozoic bedrock. This is the primary aquifer for the Natrium facility and its neighboring industries. Significant development of the aquifer within the PPG facility has occurred. The aquifer currently yields up to five million gallons of water per day.

The bedrock also is capable of producing groundwater, but the yield is generally too low for industrial use, and its water has a high mineral content. The bedrock is generally flat-lying except along the lower valley wall. The valley prior to a gradation by glacial outwash was composed predominately of sand and gravel.

Before development of the aquifer, it is reasonable to assume the water table sloped from east to west with groundwater being discharged to the Ohio River. Pumping of industrial wells has dropped the water table below the level of the river flow, thereby reversing the natural flow. The Ohio River presently represents the major source of recharge for the aquifer. As previously mentioned in Section 2.2, the river level elevation increased approximately 20 feet with the installation and startup of the Hannibal lock and dam in New Martinsville. The aquifer also receives recharge from precipitation infiltration and groundwater originating in the bedrock. Flow direction within the aquifer is radially inward toward two centers of pumping.

3.3 PAST PERMITS

Numerous environmental permits have been issued to the Natrium Plant in regard to waste management, air emissions, and water pollution control. A general listing of these permits including their date of issuance, expiration date, and agency of issuance is presented in Table 3-4. A listing of permit applications made by PPG is presented in Table 3-5. PPG Natrium environmental registrations are listed on Table 3-6.

3.3.1 RCRA Permits

Several RCRA permits were issued to the PPG Natrium Facility since the Resource Conservation and Recovery Act (RCRA) went into effect in 1980. These include both Part A and Part B Permits and a RCRA Corrective Action Waste/Minimization Permit.

The Part B permit addresses three hazardous waste management units located at the Natrium Plant. These units include the Marshall Plant Container Storage Site, the CS_2 Container Storage Site and the Mercury Surface Impoundment. The two container storage units currently operate within their permitted boundaries and are expected to remain in service as long as the Natrium plant continues to operate. An extensive closure/post-closure plan is presented in the permit application and will be implemented when closure becomes necessary.

The Mercury Surface Impoundment, a unit previously used to settle and store solids contained in the treated wastewater from the plant's mercury cell chlorine circuit, no longer operates at the Natrium plant. This unit was closed under the RCRA-approved closure plan in 1988. This impoundment has

TABLE 3-4

NATRIUM ENVIRONMENTAL PERMITS

ENVIRONMENTAL PERMIT		DATE OF		Agency
Type	Number	Issuance	Expiration	
Water Pollution Control	IW-6206-81	8-1-81 9-1-81 (Modification 1) 3-30-82 (Modification 2) 9-27-83 (Modification 3)	7-1-86	W. Va. DNR 1201 Greenbrier Street Charleston, WV 25311
	WV 0004359	1-30-75 7-23-79 (Renewal Application) 6-22-81 (Consolidated Permit Application)	1-30-80	U.S. EPA, Region III Sixth & Walnut Streets Philadelphia, PA 19106
	WV 0004359	11-30-88	11-29-93	W. Va. DWR 1201 Greenbrier Street Charleston, WV 25311
UIC - Disposal Well	IW-6109-80 uIC3S05101	1-2-80	1-2-85 7-18-94	W. Va. DNR 1201 Greenbrier Street Charleston, WV 25311
Landfill - Fly Ash	IWL-6313-86 Extension	3-17-86	3-16-92	W. Va. DNR 1201 Greenbrier Street Charleston, WV 25311
- Cal-Hypo	IWL-6301-84 Extension	1-7-84	2-6-89	
Air Pollution - Boilers	518	6-2-80	None	W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311
- Boilers	79WV06	10-8-80	None	U.S. EPA, Region III Sixth & Walnut Streets Philadelphia, PA 19106
- PELS®	84	7-22-74	None	W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311
- Cal-Hypo	643	3-24-82	None	
Harbor Dredging - Annual Maintenance	79032	7-13-79	7-13-89	U.S. Army Corps of Engineers Federal Building 1000 Liberty Avenue Pittsburgh, PA 15222
	88152	10-18-88	12-31-99	

TABLE 3-5

ENVIRONMENTAL PERMIT APPLICATIONS

Type	Date	Agency
RCRA		
Notification of Hazardous Waste Activity	11-14-80	U.S. EPA, Region III Sixth & Walnut Streets Philadelphia, PA 19106
Notification of Hazardous Waste Activity	5-14-82	W. Va. DNR 1201 Greenbrier Street Charleston, WV 25311
Hazardous Waste Permit Application, Part A	8-10-81	U.S. EPA, Region III Sixth & Walnut Street Philadelphia, PA 19106
Hazardous Waste Permit Application, Part A	5-14-82	W. Va. DNR 1201 Greenbrier Street Charleston, WV 25311
Hazardous Waste Permit Application, Part B	10-7-84	"
Received RCRA Part B Permit	7-8-87	"
RCRA Corrective Action/Waste Minimization Permit	11-4-87	U.S. EPA Region III Sixth & Walnut Street Philadelphia, PA 19106
Cal-Hypo Plant Construction - No. 643	3-24-82	W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311

TABLE 3-6

ENVIRONMENTAL REGISTRATIONS

Type	Date	Agency
Registrations - Air		
Flare - W. Va. Regulation VI CS_2 Plant Emergency Flare Brine Waste Gas Burner Inorganics Flare	 6-11-76 6-11-76 6-11-76	 W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311
SO_2 Emissions - W. Va. Regulation X CS_2 Plant Stack	 6-11-76	 W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311
SO_2 & Particulate Emissions - W. Va. Regulations II & X Nos. 4 & 5 Boilers Nos. 1 & 2 Boilers - Emergency Standby	 6-11-76 7-11-76	 W. Va. APCC 1558 Washington Street, E. Charleston, WV 25311
NESHAP Mercury and Asbestos	5-18-73	U.S. EPA, Region III Sixth & Walnut Streets Philadelphia, PA 19106
Registration - Pesticides		
FIFRA Pesticides - $C1_2$, o-DCB, p-DCB	6-74	U.S. EPA, Region III Sixth & Walnut Streets Philadelphia, PA 19106

been replaced with two settling tanks. Post-closure activities occur as described in the closure/post-closure plan in the RCRA Part B Permit application.

3.3.2 Other Permits

Other permits issued to the Natrium plant include permits for landfills, water pollution control, air pollution and emissions, and waste injection. A general description of the limitations and requirements of these permits is included in this section.

Permits were issued for several landfill units including the Cal-Hypo landfill, the Bottom/Fly Ash Landfill and the Sanitary Waste Landfill. The Cal-Hypo landfill permit issued by the West Virginia Department of Natural Resources (WVDNR) designates that the landfill is used exclusively for the disposal of non-hazardous Cal-Hypo waste. Groundwater near the Cal-Hypo unit is monitored through the sampling of nearby groundwater monitoring wells to ensure the unit's integrity is not breached. The groundwater in the vicinity of the Bottom/Fly Ash Landfill is also monitored to detect the leaching of buried waste. Currently, in accordance with its WVDNR issued permit, the northern-most section of this landfill receives bottom/fly ash produced by the powerhouse. The Sanitary Waste Landfill was also permitted through WVDNR. This unit accepted general waste from the Natrium Plant until closure of the landfill. The Sanitary Landfill was closed in 1990 following WVDNR guidelines. The Cal-Hypo and Bottom/Flyash Landfills each have a closure/post-closure plan included as a requirement of the permit. Surface water runoff from these landfills flows to permitted storm water outfalls located along the Ohio River.

The NPDES Permit issued in November 1988 covers discharges associated with all process, treatment, and storm water outfalls at the plant. PPG has upgraded many process and treatment units discharging to the various outfalls in order that their discharge complies with the NPDES Permit.

Air pollution permits and registrations were obtained for the various burners, stacks, and flares at the facility. Emissions from these units comply with their respective permit requirements. Therefore, air emissions generated from these units pose no threat to human health or the environment. These air emissions will not be considered as part of the RFI Work Plan.

The only other permit at the facility involving management of waste is the Underground Injection Control (UIC) permit issued by WVDNR. The only waste injected under the UIC permit is brine mud produced during brine purification. All brine wells where brine mud is injected are regulated by the UIC permit.

3.4 SUMMARY OF PREVIOUS INVESTIGATIONS AND CLOSURE ACTIVITIES

3.4.1 USEPA's RCRA Facility Assessment

A RFA of the PPG Industries facility in Natrium, West Virginia, was conducted to evaluate the potential for release of hazardous constituents from the SWMUs at the facility. Releases of hazardous constituents to the groundwater and to the soil from active SWMUs have been documented at the facility. Additionally, several closed surface impoundments are suspected of releasing hazardous constituents to the groundwater.

Seventeen SWMUs were identified from the preliminary review and visual site inspection. Four of these SWMUs are regulated under RCRA. These SWMUs are listed and described in Table 3-7. Six of these units currently operate while the other eleven are no longer in use. The SWMUs currently operating include two drum storage areas, one landfill, the mercury wastewater collection tanks, a bottom/flyash lagoon and the brine mud injection wells. Past units include three landfills, one surface impoundment, the carbon absorption filters, one waste tank car facility, and a BHC waste pile.

PPG Natrium's RCRA Part A and B Permit Applications identify the hazardous wastes generated from the facility's various industrial processes and operations. These include:

- D009 - mercury contaminated waste from cleanup activities associated with the chlorine process.
- F001 - spent halogenated degreasing solvents
- F003-005 - spent non-halogenated paint solvents
- K085 - distillation bottoms from the production of chlorobenzenes
- K106 - wastewater treatment sludge from the mercury cell process
- K073 - chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production
- D001 - ignitable waste consisting of waste carbon bisulfide - mentor oil mixture from the carbon bisulfide production process and from laboratory chemicals used for analytical procedures
- D002 - alkaline material from an upset or spill of caustic soda.

Recommendations from the RFA are summarized in Table 3-8.

3.4.2 Verification Investigation

A VI was conducted at the PPG Natrium Plant by IT Corporation. This investigation was conducted in accordance with the requirements set forth in Permit Condition II.B of the U.S. Environmental Protection Agency (USEPA) RCRA Corrective Action and Waste Minimization Permit No. WVD 00433 6343. This condition of the permit required PPG "to conduct an initial investigation with the objective of verifying whether releases have or have not occurred from the seven solid waste management units". The seven areas investigated during the VI include:

- Marshall Plant-Waste-Pond
- Inorganics Waste Pond
- Barium Waste Pond
- Benzene Hexachloride Waste Pile
- Fly Ash Landfill
- Sanitary Landfill
- Mercury Wastewater Collection Tanks

TABLE 3-7
RFA PRELIMINARY REVIEW OF SWMUs

Unit No.	Unit Name	Description	Use
1* **	Mercury Surface Impoundment	Clay and synthetic lined surface impoundment	Stored mercury sulfide (K106) sludge settled from wastewater.
2*	CS_2 Hazardous Waste Container Storage Unit	Drum Storage Area #1	Storage unit for CS_2 waste drums (D001)
3*	Marshall Plant Hazardous Waste Container Storage Site	Drum Storage Area #2	Storage of drummed K085, F001, F003, F005, D001, D002, and D009 waste
4* **	K073 Tracifier Waste Tank Car Storage Facility	Tank Car Storage Facility	Used to store chlorinated hydrocarbon wastes (K073)
5**	Marshall Plant Waste Pond	Clay lined waste disposal pond	Used as disposal site for waste streams from a small chloralkali plant, a chlorinated benzene plant, and a titanium tetrachloride plant
6**	Inorganics Waste Pond	Unlined earthen landfill	Served as wastewater settling pond for barium process wastes
7**	Barium Waste Landfill	Unlined earthen landfill	Disposal site for barium carbonate/chloride process wastes
8**	BHC Waste Pile	Earthen fill, open pile storage site	Storage of benzene hexachloride isomers
9	Cal-Hypo Landfill	Industrial waste landfill	Disposal of non-hazardous calcium hypochlorite waste
10	Fly Ash Landfill	Clay lined landfill	Disposal of boiler flyash and bottom ash, some barium process waste
11**	Sanitary Landfill	Class III non-chemical landfill	Disposal of general trash, rubbish, and construction debris

* Unit is a RCRA-regulated unit.
** Inactive or closed unit.
*** Unit was not identified as a SWMU by PPG

TABLE 3-7 (Continued)
RFA PRELIMINARY REVIEW OF SWMUs

Unit No.	Unit Name	Description	Use
12**	TiO_2 Ponds	Series of clay lined settling ponds	Disposal of TiO_2 pigment waste
13**	Lead Wastewater Collection Tanks	Carbon steel tank which collects wastewater from the diaphram chlorine process	Treatment of lead wastes generated from diaphragm cell process production of chlorine
14	Mercury Wastewater Collection Tanks	Series of collection tanks for mercury cell wastewater	Treatment of mercury waste from the mercury cell process in the production of chlorine
15***	Carbon Absorption Filter	Two open air steel tanks	Previously received supernatant from the mercury surface impoundment
16***	Bottom/Fly Ash Lagoon - Power Plant	Unlined surface impoundment	Collects wastewater from ash collection systems.
17	Brine Mud Injection Wells	Class III injection wells	Disposal of calcium and magnesium impurities from processed brine solutions.

* Unit is a RCRA-regulated unit.
** Inactive or closed unit.
*** Unit was not identified as a SWMU by PPG

TABLE 3-8
RFA SWMU RECOMMENDATIONS

Unit No.	Unit Name	Summary of Further Action Comments
1	Mercury Surface Impoundment	- This unit is RCRA-regulated. Any further action should be addressed under the Part B permitting process.
2	CS_2 Hazardous Waste Container Storage Unit	- This units is RCRA-regulated. Any further action should be addressed under the Part B permitting process.
3	Marshall Plant Hazardous Waste Container Storage Site	- This unit is RCRA-regulated. Further action should be addressed under the Part B permitting process.
4	K073 Tracifier Waste Tank Car Storage Facility	- This unit has been closed under an approved plan. No further action is required.
5	Marshall Plant Waste Pond	- A remedial investigation to determine the extent of the organic groundwater contamination should be conducted. - Sampling of the pumping wells near the unit should be done to determine if the water supply in the area has been affected.
6	Inorganics Waste Pond	- A more unit specific downgradient monitoring well program should be conducted to assess the extent of the contamination and verify that the unit is the source of the contamination.
7	Barium Waste Landfill	- A more unit specific downgradient monitoring well program should be conducted to assess the extent of the contamination and verify that the unit is the source of the contamination. - Conduct periodic inspections of the clay cap.
8	BHC Waste Pile	- A remedial investigation should be conducted to assess the extent of the organic groundwater contamination.
9	Cal-Hypo Landfill	- No further action is necessary for this unit at this time.

TABLE 3-8 (Continued)
RFA SWMU RECOMMENDATIONS

Unit No.	Unit Name	Summary of Further Action Comments
10	Fly Ash Landfill	- An evaluation of the soil cap should be conducted to determine its stability against heavy precipitation or flood. - The cap should be evaluated to determine its ability to prevent migration of liquids into the fill. If necessary, the cap should be replaced.
11	Sanitary Landfill	- A remedial investigation should be conducted to determine the extent and source of the organic contamination.
12	TiO_2 Ponds	- A small scale groundwater monitoring program should be implemented for the unit with parameters to include Titanium (Ti) and any other metal cations known to be present in the pigments. - Eroded portions of the landfill should be repaired and protected from further erosion due to flooding.
13	Lead Waste Water Collection Tanks	- Certification of proper closure should be provided upon closure which was verbally reported to be within the next few months during the visual site inspection (VSI).
14	Mercury Waste Water Collection Tanks	- A remedial investigation should be conducted to identify the source of the mercury contamination (i.e., leak in process line).
15	Carbon Absorption Filters	- Any further action for this unit should be addressed under NPDES authority.
16	Bottom/Fly Ash Lagoon - Power Plant	- Monitoring wells should be placed downgradient from the lagoon to detect potential releases to groundwater.
17	Brine Mud Injection Wells	- Any further action for this unit should be addressed by the UIC permitting process.

PPG developed and implemented a groundwater investigation to determine whether further investigation or remediation was necessary. Groundwater samples were collected from newly installed and existing monitoring wells strategically located about each of the solid waste management units subject to the investigation. Soil samples were also collected from strategically located upgradient and downgradient positions.

The report presented field methodology and data acquisition procedures implemented during the VI. As a deliverable required under the Corrective Action Permit, the VI was formally submitted to USEPA and was commented on by USEPA in an April 24, 1991 letter. Information presented to USEPA in the VI report is not presented in this DOCC. USEPA review of the report concluded that an RFI was needed.

4.0 NATURE AND EXTENT OF CONDITIONS BY PLANT AREA

In order to discuss the RCRA Corrective Action aspects of the plant, it was decided to divide the plant into a number of smaller areas based on geography, similarity in functions, and the presence of certain physical features. The remainder of this document is keyed to these areas. Descriptions of these areas and the logic behind the creation of each individual area is presented in this section. The location and boundaries of each area are shown on Figure 4-1.

PPG's Natrium, West Virginia, facility has a history of ownership and operations prior to PPG's acquiring and developing the property. In addition PPG has changed its operations and has constructed and demolished a number of operations during that time. In many areas of the plant there are current operations as well as inactive units from past operations.

PPG currently produces chlorine (Cl_2), caustic soda (NaOH), and inorganic and organic chemical products at its Natrium facility in West Virginia. The inorganic chemical products include hydrogen gas (H_2), sodium sulfide, sodium sulfhydrate (NaSH), solid sodium hydroxide pellets (PELS®), liquified ammonia (NH_3), hydrogen sulfide (H_2S), and calcium hypochlorite (Cal-Hypo), in addition to chlorine and caustic soda. The organic products include chlorinated benzene products, such as monochlorobenzene (MCB) and dichlorobenzene, and carbon bisulfide (CS_2).

In the past, the Natrium facility produced several inorganic and organic chemical products in addition to the products currently produced. These products included benzene hexachloride (BHC), barium compounds, titanium tetrachloride ($TiCl_4$), titanium dioxide (TiO_2), and organic and inorganic chemical products produced in bench and pilot scale processes. These products are no longer produced at the Natrium facility.

The current and past production processes utilized by the Natrium facility along with the major raw materials, products, and waste materials used or produced by each process are described as they relate to each other. A description of the known current and past management methods for each of these substances is also included in this section.

This section also describes all potential SWMUs and AOCs at the Natrium Plant. In addition, a physical description and reason for listing of each SWMU is presented in Table 4-1. Certain SWMUs will not be considered in the RFI Work Plan. The rationale leading up to this decision is included in this section. Table 4-2 presents a physical description and reason for listing each Area of Concern.

4.1 AREA 1: UNDEVELOPED AREA

This area has never been developed. The boundaries for Area 1 were chosen to include virtually all undeveloped property in which no waste has been deposited. In addition, no spills are documented in this area. A guardhouse and parking lot are contained in this area; however, these structures are not considered to be areas of concern. The east ridges and the non-utilized area north of the ammonia process facility and east of the CSX Railroad are located in this area. In addition, the leased property mentioned in Section 2.3.1 and the Wheeling Power substation are located east of Route 2, on the base of the east ridges and are not subject to the RFI process.

TABLE 4-1

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 1: Undeveloped Area		None	N/A	N/A	N/A
Area 2: Bottom/Fly Ash Area	2-1	Bottom/Fly Ash Landfill Units J-3, J-4 and J-5.	Clay lined landfill.	Permitted by WVDNR No. IWL 6313-86.	Used for disposal of boiler bottom and fly ash.
	2-2	Oil Storage Tank Area (for #3 brine field development)	Two steel storage tanks.	Not applicable.	Used for storage of #3 brine field development oil.
Area 3: Ammonia Process Area	3-1	Oil Water Separator Area.	Steel tank with separate extraction valves.	Not applicable.	Stored oil separated from condensate generated in the ammonia process.
	3-2	Vehicle Repair Facility.	Small concrete building.	Not applicable.	Generates soiled rags, old mechanical parts, small quantities of waste oil and cleaning solvents.
	3-3	Storm Sewers, Trenches and Drains.	Process and runoff collection system for Ammonia Process area.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater and condensate water generated in the Ammonia Plant Area.
Area 4: Marshall Plant Waste Pond	4-1	Bottom/Fly Ash Landfill Units J-1 and J-2.	Clay lined landfill, no longer accepts waste; covered with soil and seeded to prevent erosion; closure 1980.	Not applicable.	Operated as a disposal facility for boiler bottom and fly ash; accepted barium waste.
	4-2	Marshall Plant Waste Pond.	Clay lined disposal pond. Covered with soil. Includes concrete rubble under soil layer. Size: 275 ft. by 220 ft.	Not applicable.	Used as disposal site for wastes from Marshall Plant, chlor-alkali plant, chlorinated benzene plant, and titanium tetrachloride plant.
Area 5: Marshall Plant Product Area	5-1	RCRA Hazardous Waste Drum Storage Area (Marshall Plant).	Drum storage area.	RCRA Part B Permit permitted waste storage facility.	Storage of drummed K085, F001, F003, D001, D002, and D009 waste.
	5-2	Used Oil Storage Tank.	2,000 gallon above ground steel tank.	Not applicable.	Accumulation site for used lubricating oil.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 5: Marshall Plant Product Area (continued)	5-3	Used Oil Drum Storage.	Concrete curbed storage area, size 10' x 20'.	Not applicable.	Accumulation site for used lubricating oil.
	5-4	Used Drum Storage Area.	Storage area for used drums.	Not applicable.	Accumulation site for used drums prior to offsite disposal.
	5-5	Process and Sanitary Sewers.	Process and sanitary collection system for former Marshall Plant Product Area.	Permitted by WVDNR NPDES Permit No. WV0004359.	Currently collects runoff and formerly collected process wastewater generated during the Marshall Plant's operation.
	5-6	Sanitary Landfill.	Class III non-chemical landfill, constructed of three closed separate cells size: 1100 ft. x 500 ft.; covered with a 2 ft. layer of soil and a vegetative cover.	During operation submitted by Sanitary Landfill Permit No. 7192; closed 1990.	Used for disposal of general trash, rubbish and construction debris.
	5-7	Dumpster Trash Compactor Facility. (Waste Collection Area)	Compaction facility.	Not applicable.	Operates as a compactor facility which accepts general waste from dumpsters throughout the Natrium plant.
Area 6: MCB Production Area	6-1	K085 Accumulation Area.	Satellite drum accumulation area.	Not applicable. RCRA inspected.	Used as accumulation point for K085 waste before transfer to RCRA Marshall Plant hazardous waste drum storage site.
	6-2	Less Than 90 Day Accumulation Area.	Drum accumulation area.	Not applicable. RCRA inspected.	Temporary 90 day storage area of hazardous waste.
	6-3	Organics Treatment System.	Enclosed organics stripper system.	Permitted by WVDNR NPDES Permit No. WV0004359.	Removes organics from the MCB process wastes.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 6: MCB Production Area (Continued)	6-4	MCB Process Sewers.	Pipe and process wastewater collection system for MCB Production Area.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collects runoff and process wastewater generated in the MCB Production area.
	6-5	Product Tank Car Loading Area.	Railroad tank car loading area with sump collection system.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collects routine and systematic releases of MCB product during loading; flows by sewers to steam stripper sewers.
	6-6	Cleanout Area for Process Equipment.	Bare, unvegetated area.	Not applicable.	Formerly used during cleaning of process equipment. Wash water flowed onto ground. Storage tank located in this area was used to store cleanout waste.
	6-7	Former Location of BHC Pile.	Bare, unvegetated area.	Not applicable.	Formerly stored benzene hexachlorite isomers directly on ground.
Area 7: Research and Development Area New Laboratory	7-1	Laboratory Sewer System.	Piped wastewater collection system	Permitted by WVDNR NPDES Permit No. WV0004359.	Routine and systematic disposal of various wastes were possibly discharged into this system.
Area 8: Chlorine and Caustic Process Area	8-1	D009 Satellite Accumulation Area.	Small temporary drum storage area.	Not applicable, RCRA inspected.	Temporarily stores D009 waste until it is transported to the Marshall Plant storage area.
	8-2	Area of K073 Waste Tank Car.	Area where former K073 waste storage railroad tank car occupied is barren.	Approval of closure under RCRA permit.	Formerly a K073 waste tank car was located in this area. The tank car is no longer located onsite.
	8-3	Tracifier Treatment System. (removed)	Process organic stripper system.	Not applicable.	This area was previously recognized as a SWMU since K073 waste was stored in a tank car at this location.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 8: Chlorine and Caustic Process Area (Continued)	8-4	Chlorine Cooling/Drying System.	Acid stripper and non-contact cooling system.	Not applicable.	Removed and stored chlorinated organics from the chlorine stream.
	8-5	Lead/Asbestos Treatment System(s).	Series of 3 above ground steel tanks.	Effluent permitted by WVDNR NPDES Permit No. WV0004359.	Formerly treated lead sulfide wastes, currently removes asbestos wastes generated from the diaphragm cell process production of chlorine.
	8-6	Oil Storage Tank Area (for #1 Brine Field Development.	Two steel oil storage tanks.	Not applicable.	Used for storage of #1 brine field development oil.
	8-7	pH Collection System.	Wastewater collection tanks used for pH equalization to discharge.	Effluent permitted by WVDNR NPDES Permit No. WV0004359.	Collects and treats wastewater from process areas located throughout the facility.
	8-8	Non-Mercury Process Sewer, Trenches, Sumps (treated prior to discharge).	Process wastewater collection system for all non-mercury units.	Outflow permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater generated in all chlorine non-mercury areas.
	8-9	Brine Treatment System.	Includes chemical treatment, settling tanks.	Not applicable.	Treats brine by collecting the impurities as brine mud.
	8-10	Former Site of Circuits 1-4.	Formerly existed as chlorine circuits 1-4. Presently is a vacant lot.	Not applicable.	Lead detected in soil located in this area probably can be attributed to spills of process water from the chlorine process and from graphite cell demolition.
	8-11	Closed Mercury Surface Impoundment (K106 waste)	Formerly operated as a clay, concrete and synthetic (Hypalon) lined surface impoundment. Size: 180 ft. x 90 ft.	RCRA permitted waste storage surface impoundment. Effluent permitted by WVDNR RCRA Permit No. WV0004336343 and NPDES Permit No. WV0004359.	Formerly settled and stored mercury sulfide (K106) sludge.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 8: Chlorine and Caustic Area (Continued)	8-12	Mercury Brine Treatment System	Enclosed tank system, part of chlorine process.	Not applicable.	Removes impurities from brine.
	8-13	Mercury Butter Still.	Small waste collection tank located on second floor of mercury cell chlorine #7 circuit.	Not applicable.	Collects and accumulates mercury contaminants generated during purification of elemental mercury.
	8-14	Mercury Treatment System (including carbon absorption beds)	System composed of open top, hypalon lined, steel settling tanks and open top carbon absorption units.	Outflow permitted by WVDNR NPDES permit no. WV0004359.	Receives wastewater from the mercury chlorine circuit, settles and stores mercury contaminated sludge.
	8-15	Mercury Process Sewer, Trenches, and Sumps.	Process wastewater collection system for #7 circuit.	Outflow permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater generated in the chlorine mercury #7 circuit. Wastewater is transported to mercury treatment system.
	8-16	Ditch Below Mercury Treatment System.	Concrete lined ditch located on east side of chlorine #5 circuit.	Not applicable.	Formerly contained mercury released from the mercury process treatment area.
	8-17	#7 Circuit Hydrogen Gas Purifying System.	Cools, compresses hydrogen, extracts mercury vapor	Not applicable.	Produces a caustic/brine condensate containing mercury brine which goes to the mercury treatment system.
	8-18	Mercury Wastewater Collection Tanks.	Series of rubber lines carbon steel collection tanks for mercury cell wastewater.	Not applicable.	Collects wastewater from the mercury cell process area.
	8-19	Weak Caustic Collection Tanks.	Large steel tanks located near caustic process area.	Not applicable.	Weak caustic wastewater collected in the process area.
	8-20	Process Sewers in Caustic Area.	Includes process sump and process wastewater collection system for caustic process building.	Not applicable.	Collects strong caustic spills which are reused in the caustic process.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 9: Power Plant Area	9-1	Storage Facility/Hopper.	Elevated steel storage tanks with open bottom for loading of trucks.	Not applicable.	Used as intermediate storage facility for fly/bottom ash generated by the power plant.
Area 9: Power Plant Area (Continued)	9-2	Former Bottom/Fly Ash Lagoon (south of Powerhouse).	Vacant area south of power plant.	Not applicable.	Unit formerly operated as a settling pond for ash slurry.
	9-3	Bottom/Fly Ash Lagoon.	Active lagoon north of power plant.	Permitted by WVDNR NPDES Permit No. WV0004359.	Currently operates as a settling pond for ash slurry.
	9-4	Coal Pile Runoff Collection System.	Trench type collection system.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collects runoff from the coal pile which contains high concentrations of metals especially manganese, copper, magnesium, and iron.
Area 10: Inorganics Process Area	10-1	Inorganics Waste Pond.	A closed unlined earthen landfill capped. Size: 225' x 140'. Includes concrete rubble under soil cap.	Not applicable.	Served as wastewater settling pond for barium plant. Waste was not removed prior to closure.
	10-2	Sewer System for Former Barium and $TiCl_4$ Plants.	Collection system for wastewater.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collected wastewater generated during plant operation.
	10-3	Process Sewers for Inorganics Area.	Trench, sump collection system for wastewater.	Permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater generated in the Inorganics process area.
Area 11: Calcium Hypochlorite Process Area.	11-1	Cal-Hypo Reagent Prep Area.	Treatment and storage area for Cal-Hypo process wastes consisting of a filter press and storage bins.	Not applicable.	Treats Cal-Hypo wastewater; generates Cal-Hypo solid waste by filter pressing waste product. Stores waste until disposal in Cal-Hypo landfill.
	11-2	Process Sewer for Cal-Hypo.	Collection system for wastewater.	Outfall permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater produced in the Cal-Hypo Process Area.

TABLE 4-1 (Continued)

LISTING OF SOLID WASTE MANAGEMENT UNITS

Area Number and Name	SWMU Number	Potential SWMU Name	Description	Permit Status	Reason For Listing as SWMU
Area 12: PELS® Process Area	12-1	PELS® Area Process Sewer.	Wastewater collection system includes pipes, trenches and sumps.	Outfill permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater produced in the PELS® process area.
	12-2	PELS® Bulk Loading Area.	Truck loading area, concrete slab located on ground.	Not applicable.	Routine and systematic release of product in this area prior to slab installation.
Area 13: Southern End of Plant	13-1	Barium Landfill.	Currently exists as an area with vegetation. Unlined earthen landfill size: 200 ft. x 200 ft.	Not applicable.	Used as a disposal site for barium process wastes.
	13-2	TiO_2 Ponds.	Series of clay lined settling ponds size: 150' x 200'.	Not applicable.	Used for disposal of TiO_2 pigment waste. Waste was not removed prior to closure.
	13-3	The Location of the Former BHC Storage Pile Location.	Formerly an earthen fill, open pile storage site, currently exists as a vacant area. Size: 75' x 150'	Not applicable.	Used for storage of benzene hexachloride isomers.
	13-4	Sewers Inside and Surrounding Paint Shop Area.	Wastewater collection system.	Outfall permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater produced in the Paint shop.
	13-5	Cal-Hypo Landfill.	Industrial waste landfill.	Permitted by WVDNR landfill permit.	Disposal of non-hazardous calcium hypochlorite waste.
	13-6	Oil Storage Tank Area (for #2 brine field development).	Two steel storage tanks.	Not applicable.	Used to store development oil for the #2 brine field.
Area 14: Carbon Bisulfide Process Area	14-1	RCRA CS_2 D001 Drum Storage Area.	Enclosed hazardous waste drum storage area.	RCRA Part B permitted.	Used for storage of drums containing hazardous waste oil (D001).
	14-2	CS_2 Area Process Sewers.	Concrete lined trench and sump system.	Outfall permitted by WVDNR NPDES Permit No. WV0004359.	Collects wastewater and runoff produced in the CS_2 process area. Removes waste oil from process wastewater.

TABLE 4-2
LISTING OF AREAS OF CONCERN

Area Number and Name	AOC Number	Areas of Concern (AOC)	Description of AOC	Reason for Listing as an AOC
Area 1: Undeveloped Area	None	None	Not applicable.	Not applicable.
Area 2: Bottom/Fly Ash Disposal Area	None	None	Not applicable.	Not applicable.
Area 3: Ammonia Process Area	3-1A	Acid Storage Tank	Single weathered storage tank	Probability exists that releases of hydrochloric acid occurred from this tank
Area 4: Marshall Plant Waste Area	None	None	Not applicable.	Not applicable.
Area 5: Marshall Plant Production Area	5-1A	Soil Throughout Area	The soil located within the boundaries of Area 5	This soil has a potential for release of contaminated due to occasional releases which occurred during operation of this production area.
	5-2A	Fuel Oil Storage Area.	Above ground, diked storage tank	Gasoline is occasionally released onto the ground during routine transfer to vehicles.
	5-3A	Gasoline Storage Facility.	Former above ground storage tank	Occasional releases of fuel occur during routine use of this storage facility.
Area 6: MCB Production Area	6-1A	Intermediate and Product Storage Containment Area and Sump	Tank car product loading area.	This system collects product releases which occasionally occur during product loading. Prior to 1990 this area was uncontained.
	6-2A	Soil Beneath CS_2 Tank	One of six steel storage tanks located along the bank of the Ohio River.	Releases which occurred in the past potentially contaminated the soil beneath the CS_2 storage tank.
	6-3A	Soil in Entire Area	The soil located within the boundaries of Area 7.	A containment system was installed two years ago. Prior to this system's installation, any releases from tanks or process equipment went onto the ground.
Area 7: Research and Development Area Near Laboratory	7-1A	R&D Area Northeast of Lab	The R&D facility no longer exists. In the past several buildings and small pilot plants were part of this AOC.	Organics contamination potentially present in the soil. Past practices included washing out equipment and ground disposal of products.

TABLE 4-2 (Continued)
LISTING OF AREAS OF CONCERN

Area Number and Name	AOC Number	Areas of Concern (AOC)	Description of AOC	Reason for Listing as an AOC
Area 8: Chlorine and Caustic Process Area	8-1A	Former BHC Production Area	This facility no longer operates. Currently, this area is part of the No. 8 chlorine circuit.	During production small BHC piles would periodically accumulate in this area. There is a possibility that BHC contaminants may be in the soil.
	8-2A	Gasoline Storage Facility	Above ground concrete diked storage tank.	Gasoline is occasionally released onto the ground during routine transfer to vehicles.
	8-3A	Caustic Tank Car and Truck Loading Areas	Both of these loading areas are equipped with containment devices such as collection sumps.	In the past, an occasional uncontained release, i.e., wash out of tank cars, may have occurred. Any contamination resulting from these releases may still be present in the soil near these loading areas.
	8-4A	Graphite Cell Construction Area	Construction area near #5 circuit where graphite chlorine cell were made.	Verbal reports tell of potential releases of lead and mastic during cell construction.
	8-5A	Chlorine Area (former) Once Through Sewer	Trench system which formerly discharged directly to the Ohio River.	This trench system collected runoff and other waters generated in the chlorine area. Some mercury contamination may remain in this area.
	8-6A	All Caustic Storage Tanks	Various steel above ground storage tanks exist at locations throughout the Natrium Plant.	Documented releases have occurred from the caustic storage locations throughout the plant.
Area 9: Power Plant Area	None	None	Not applicable.	Not applicable.
Area 10: Inorganics Process Area	10-1A	Soil in the Inorganics Area	The soil located within the boundaries of Area 11.	The soil in this area has a high potential for inorganic contamination, mainly consisting of NaSH. Most of the releases in this area occurred in the past.
	10-2A	Old $TiCl_4$ Storage Tanks	Ten steel above ground storage tanks which contained products of the $TiCl_4$ process.	The potential for leakage or release exists for these tanks.
Area 11: Calcium Hydrochlorine Process Area	None	None	Not applicable.	Not applicable.

TABLE 4-2 (Continued)
LISTING OF AREAS OF CONCERN

Area Number and Name	AOC Number	Areas of Concern (AOC)	Description of AOC	Reason for Listing as an AOC
Area 12: Pels Process Area	None	None	Not applicable.	Not applicable.
Area 13: Southern End of Plant	13-1A	Drip Gas Drum Storage (near #8 brine well)	This is a salable product storage area.	There exists a potential for release into the soil due to spillage.
Area 14: Carbon Bisulfide Process Area	14-1A	Soil in Process Area	Part of the process area is contained with concrete dikes.	One time releases of CS_2 have occurred throughout the CS_2 process area.
	14-2A	Tank Car Loading Area	Loading area for CS_2.	Any contamination from release prior to the contaminants installation may have left residuals in the soil.

4.1.1 Process History

This area has not been used for process purposes.

4.1.2 Closure Activities

No closure activities have taken place in this area.

4.1.3 Potential SWMUs

There are no SWMUs in this area.

4.1.4 Areas of Concern(AOCs)

There are no AOCs located in this area.

4.2 AREA 2: FLY ASH DISPOSAL AREA

This area is located approximately one mile north of the center of the plant, between the Ohio River and the CSX Railroad right-of-way. Bottom/fly ash landfill sections J-3, J-4 and J-5 are located within this area. The boundaries for this area were designated to separate bottom/fly ash units J-3, J-4 and J-5 from adjacent units J-1 and J-2. Units J-1 and J-2 were reported to have received barium wastes while J-3, J-4 and J-5 did not. Two oil storage tanks which contained brine well development oil for the #3 brine field were also located within Area 2. Removal of these tanks occurred during past site renovation activities.

4.2.1 Process History

This area has not been used for process purposes.

4.2.2 Closure Activities

No closure activities have taken place in this area.

4.2.3 Potential SWMUs

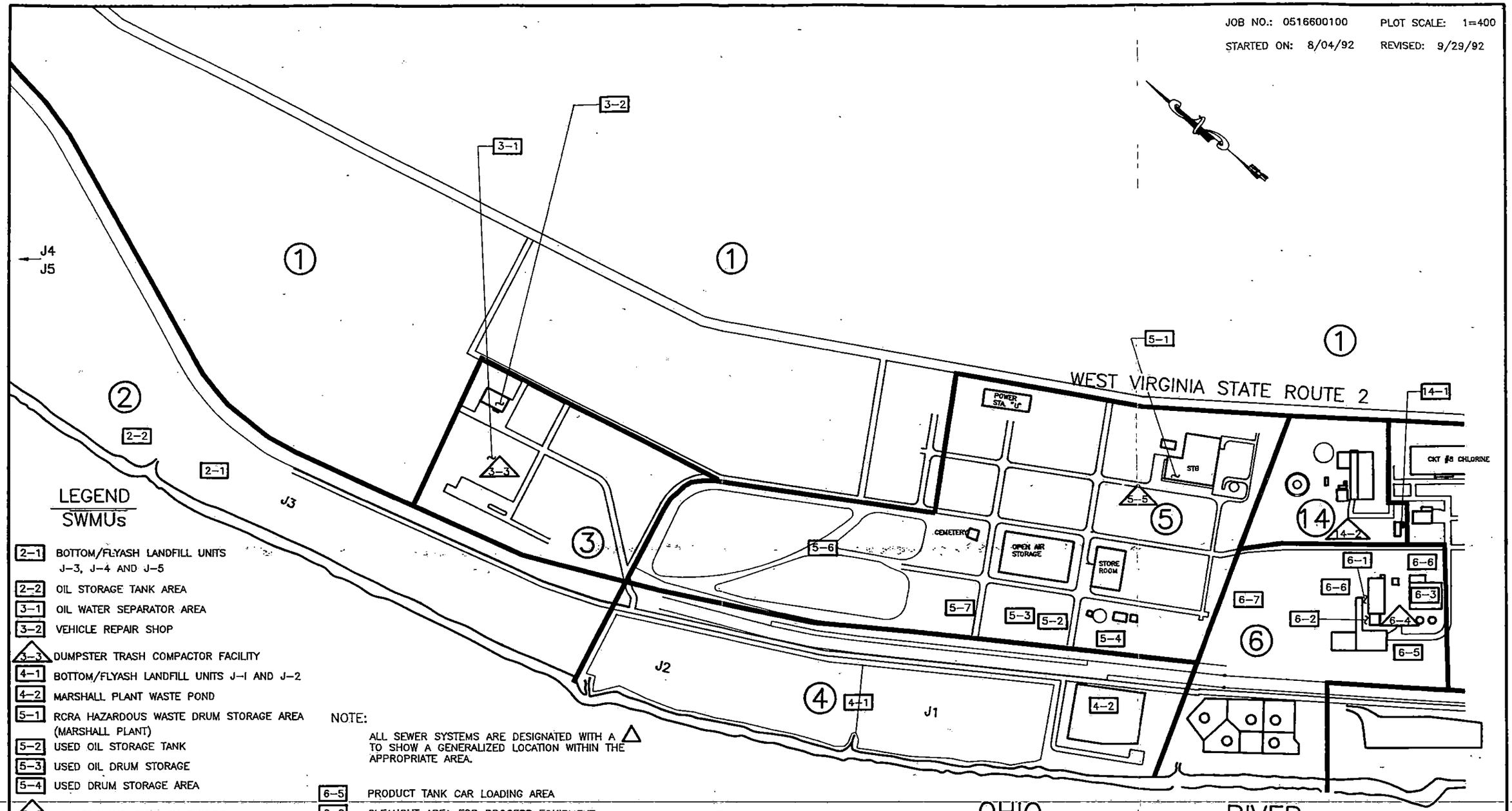
One SWMU and one potential SWMU exist in this area. The Bottom/Fly Ash Landfill, a RFA identified SWMU (No. 10), occupies most of this area. However, as mentioned in the description of Area 2, this previously identified SWMU is separated into two units. This was done to differentiate cells accepting hazardous materials from cells which did not accept hazardous materials. The potential SWMU located in Area 2 is the former #3 Brine Field development Oil Storage Tank site. The locations of these units are presented on Figure 4-2.

Fly Ash Landfill Units J-3, J-4 and J-5 (SWMU No. 2-1): The major source of waste currently entering the landfill is fly ash recovered by electrostatic precipitators and a bag house installed to remove particulate from the combustion of coal in the PPG boilers. Construction debris periodically generated during removal of old foundations or demolition of buildings is taken to J-5 and placed at the foot of the fill area.

The bottom/fly ash units J-3 and J-4 were filled and covered prior to the opening of unit J-5 in November 1975. Units J-3 and J-4 are no longer in use. All three of these units accepted bottom ash produced from the power facility until 1975 when the boiler precipitators were installed. Section

JOB NO.: 0516600100 PLOT SCALE: 1=400

STARTED ON: 8/04/92 REVISED: 9/29/92



LEGEND

SWMUs

- 2-1 BOTTOM/FLYASH LANDFILL UNITS J-3, J-4 AND J-5
- 2-2 OIL STORAGE TANK AREA
- 3-1 OIL WATER SEPARATOR AREA
- 3-2 VEHICLE REPAIR SHOP
- 3-3 DUMPSTER TRASH COMPACTOR FACILITY
- 4-1 BOTTOM/FLYASH LANDFILL UNITS J-I AND J-2
- 4-2 MARSHALL PLANT WASTE POND
- 5-1 RCRA HAZARDOUS WASTE DRUM STORAGE AREA (MARSHALL PLANT)
- 5-2 USED OIL STORAGE TANK
- 5-3 USED OIL DRUM STORAGE
- 5-4 USED DRUM STORAGE AREA
- 5-5 PROCESS AND SANITARY SEWERS
- 5-6 SANITARY LANDFILL
- 5-7 STORM SEWERS,TRENCHES AND DRAINS
- 6-1 K085 ACCUMULATION AREA
- 6-2 LESS THAN 90 DAY ACCUMULATION AREA
- 6-3 ORGANICS TREATMENT SYSTEM
- 6-4 MCB PROCESS SEWERS
- 6-5 PRODUCT TANK CAR LOADING AREA
- 6-6 CLEANOUT AREA FOR PROCESS EQUIPMENT
- 6-7 FORMER LOCATION OF BHC PILE
- 14-1 RCRA CS_2 D001 DRUM STORAGE AREA
- 14-2 CS_2 AREA PROCESS SEWERS

NOTE:

ALL SEWER SYSTEMS ARE DESIGNATED WITH A △ TO SHOW A GENERALIZED LOCATION WITHIN THE APPROPRIATE AREA.

DENOTES BOUNDARY LOCATIONS FOR GEOGRAPHIC AREAS.

SCALE

0 200 400

1"=400'

FIGURE 4-2

PPG INDUSTRIES, INC. NATRIUM PLANT NEW MARTINSVILLE, WEST VIRGINIA	SWMUs LOCATED IN AREAS 2,3,4,5,6 AND 14
ICF KAISER ENGINEERS PITTSBURGH, PA	DATE: 9/09/92 DR.: R.C. LIPP
	SCALE: 1"=400' DWG. NO. 05166-B1